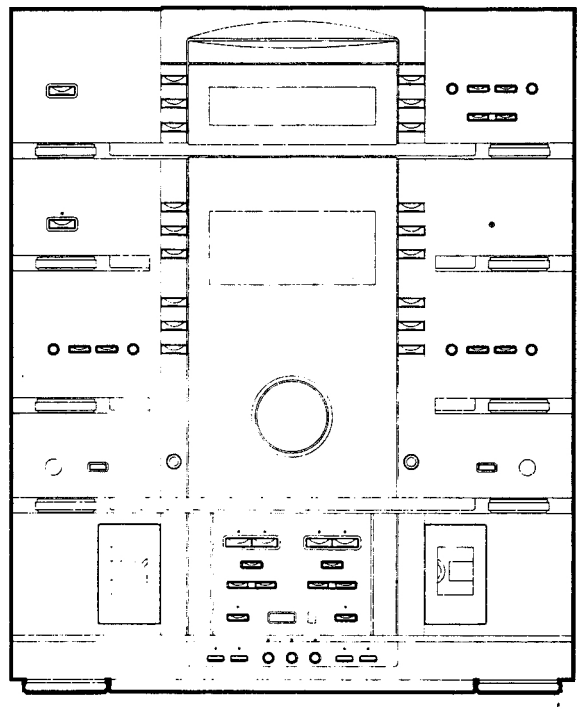
Quelle TECHNISCHER KUNDENDIENST

Technische Unterlage

Best.-Nr.:
037 021 2

VTC-CD151

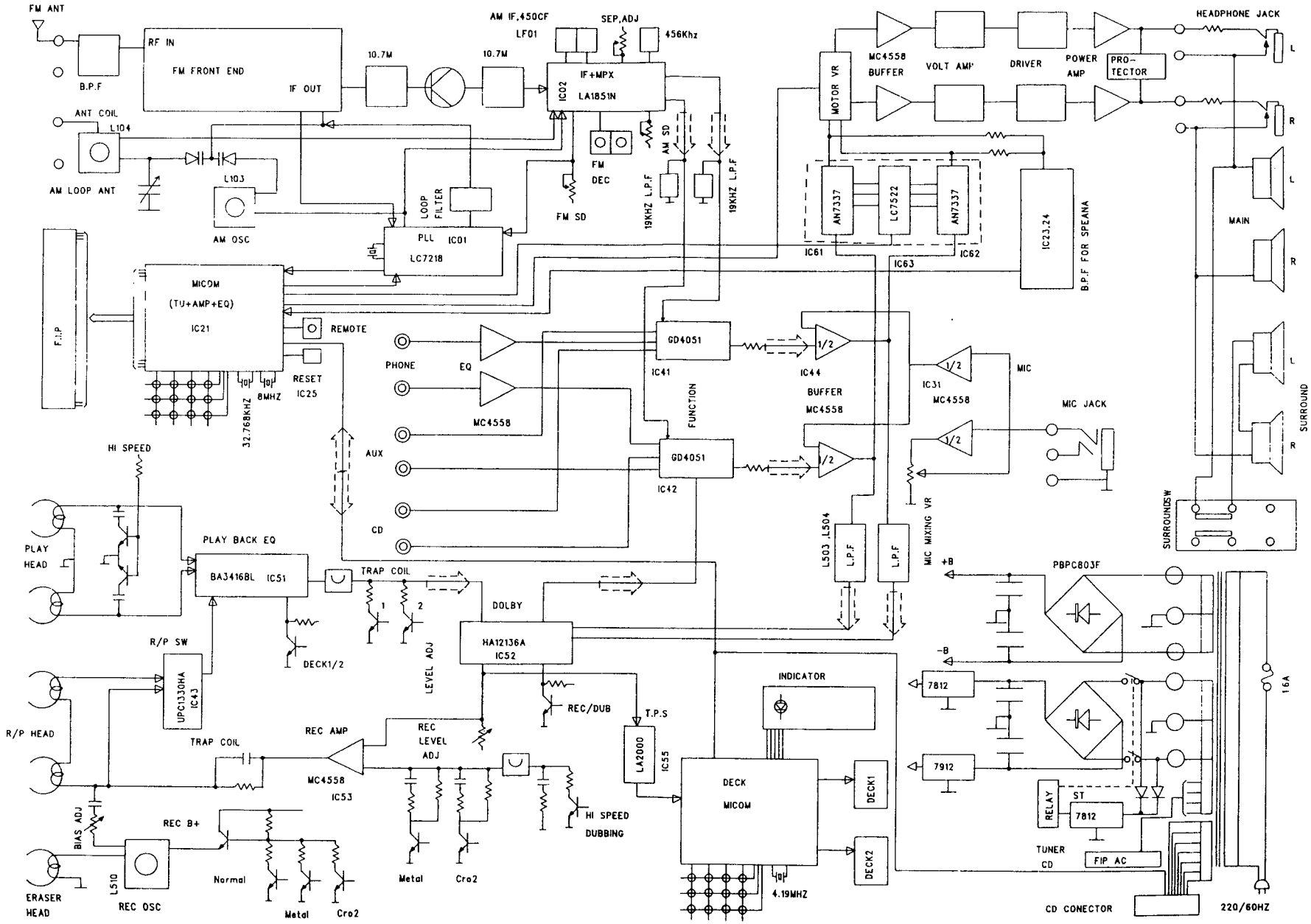


UTS-Nr.:	999	QUELLE
Best.Nr.:	0370213/01	
Ger.Bez.:	UNIV.POWER-PACK	
GKz:	G	GERAET
WGT:	652	POWERPACK
KD-Sektor:	R	RUNDFUNK
BaumNr.:	00	KEIN DIAGNOSEBAUM VORHANDEN
Klassierung:	STK	STEREOKOMBINATION
IFW-FehlerGru.:	205	RDF.,VERST.,TB.,PHONO,CD,CB
Type/Privileg/Universum.Nr	VTC-CD151	
Beschreibung		
VK-Preis:	1099.00	
Serviceart:	01	QUELLE-TKD
Garantie fuer Kunden	06	Monate
Sondervereinbarungen:	0	SIEHE SERVICEART

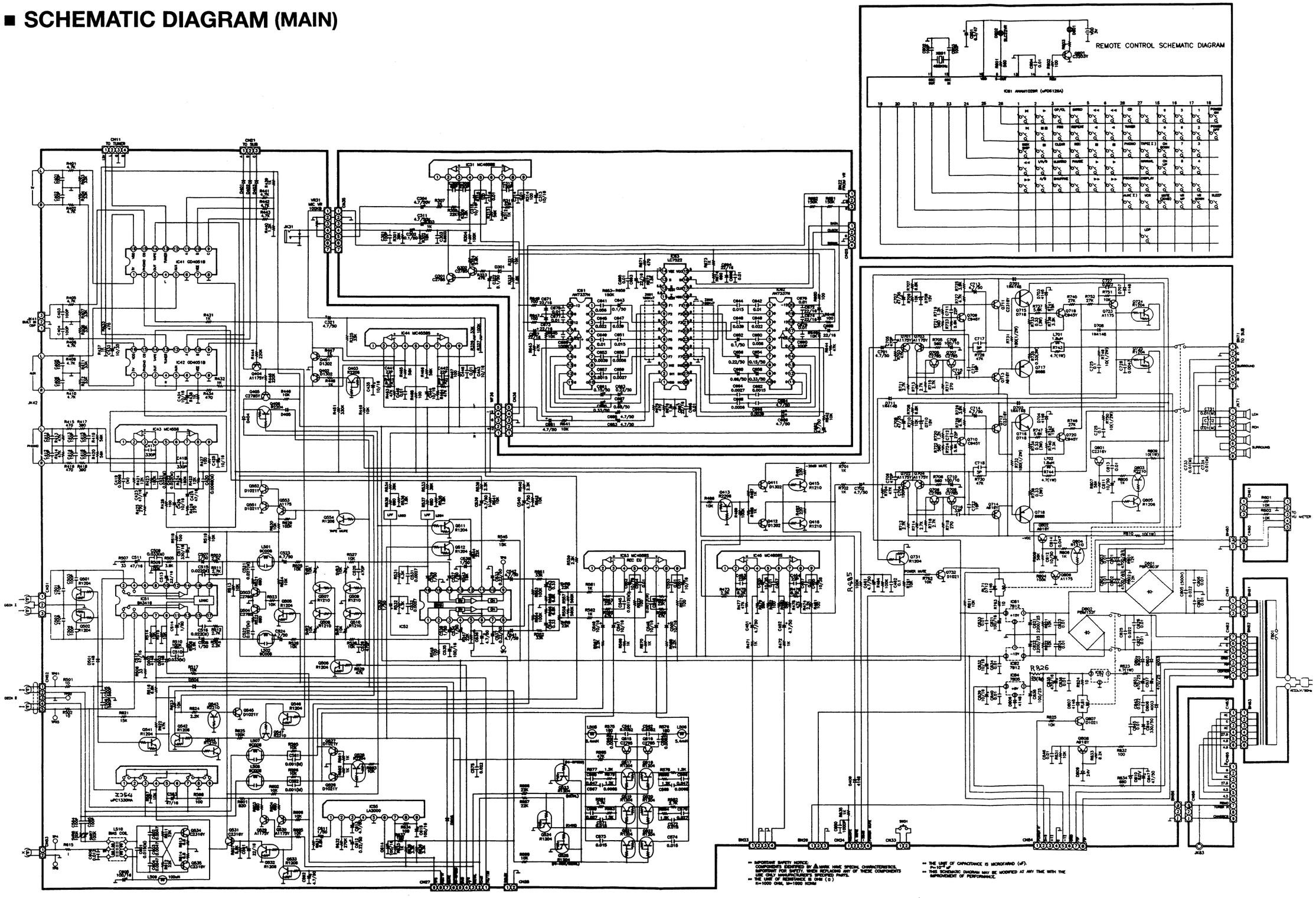
KAT. 952 DATUM 14.03.95 SEITEN 20

Quelle Schickedanz AG & Co.
Kundendienstzentralleitung Duisburger Str. 57, 90451 Nürnberg
Bei allen Reparaturen sind die gültigen Sicherheitsvorschriften zu beachten!

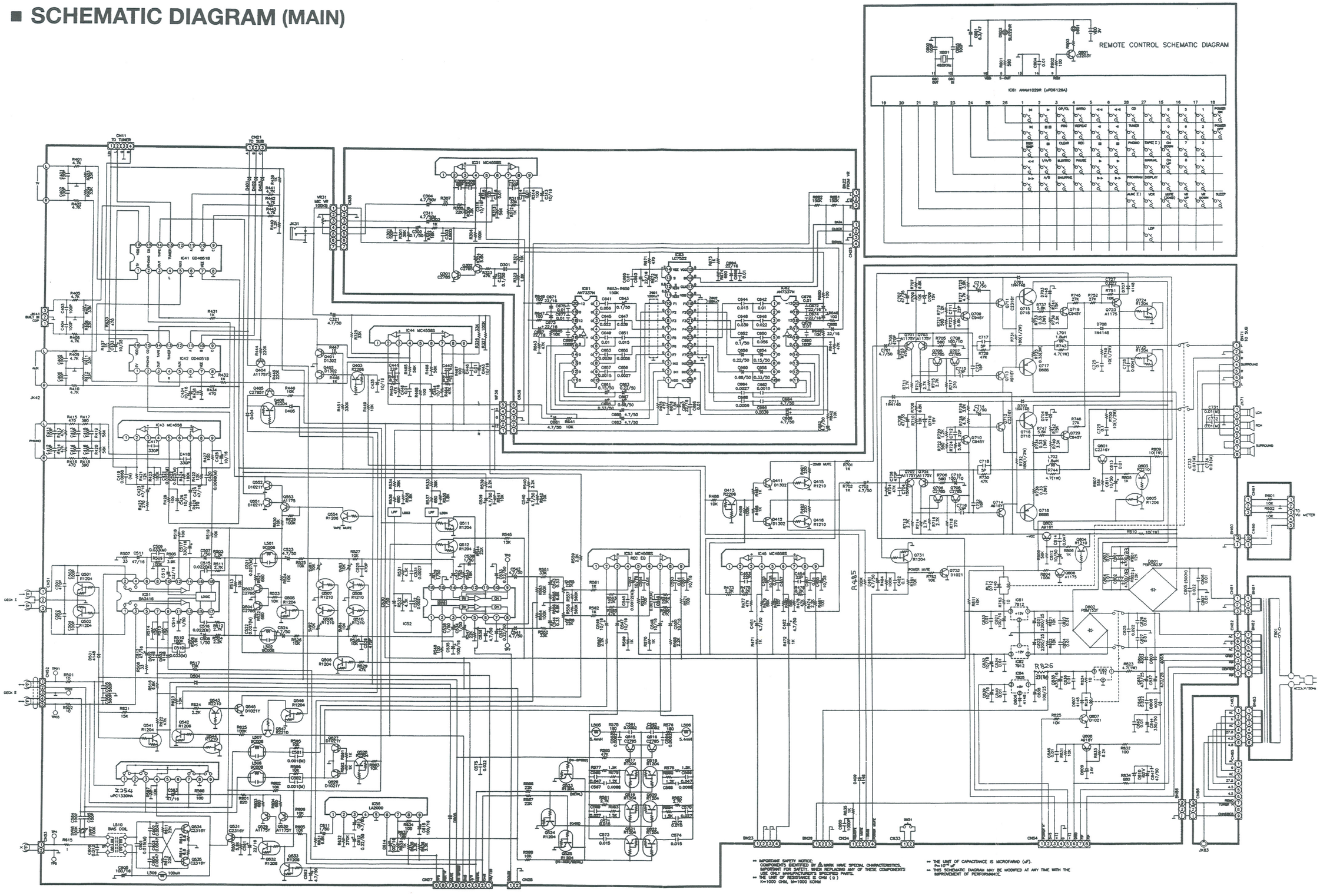
■ BLOCK DIAGRAM



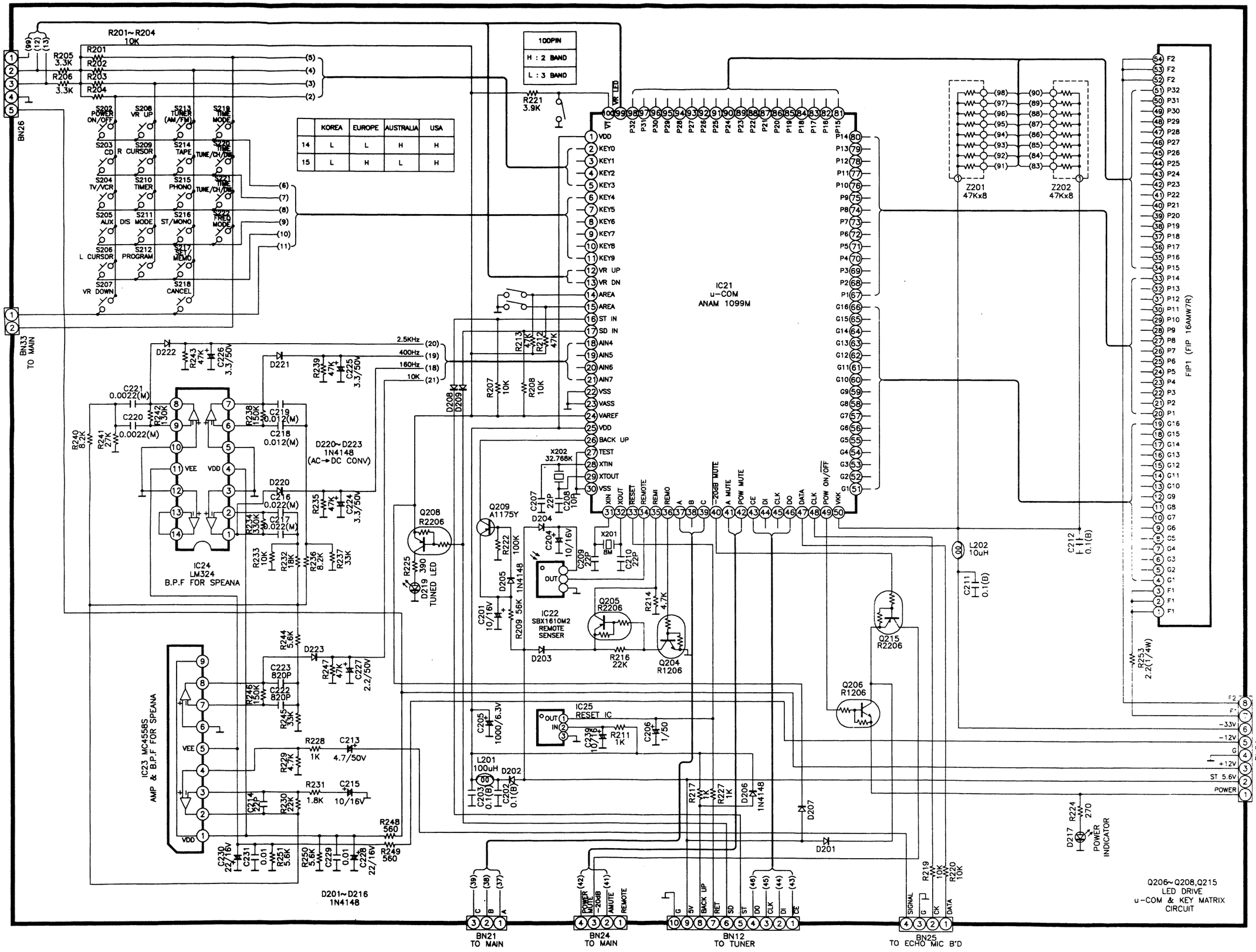
■ SCHEMATIC DIAGRAM (MAIN)



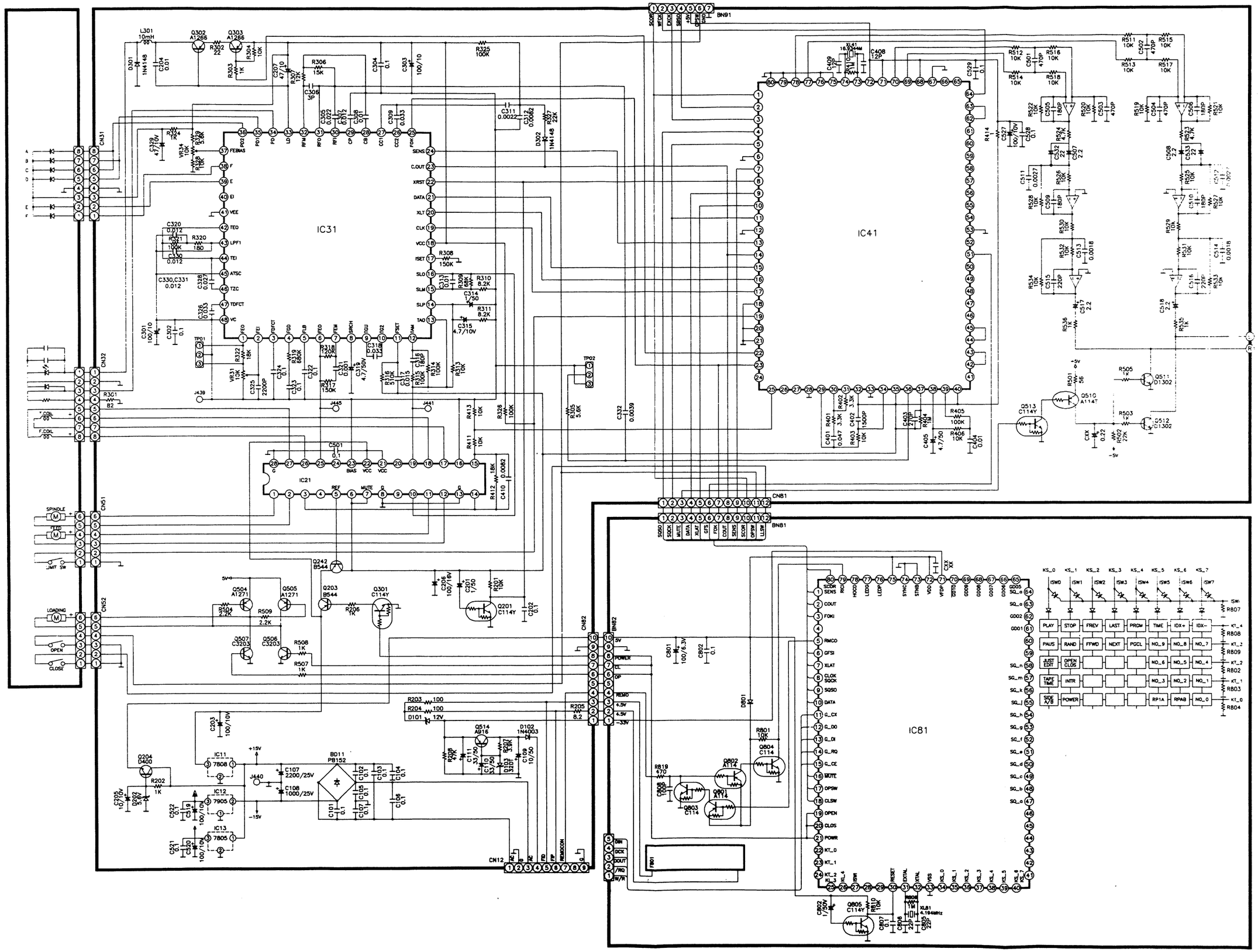
■ SCHEMATIC DIAGRAM (MAIN)



(SUB)

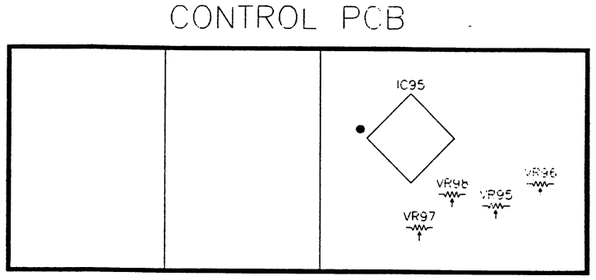

R201~R204
10K
R201
R202
R203
R204
R205
3.3K
R206
3.3K
BN26
S202 POWER ON/OFF
S208 VR UP
S213 TUNER (AM/FM)
S219 TIME MODE
S203 CD
S209 R CURSOR
S214 TAPE
S220 TIME TUNE/CH/DN
S204 TV/VCR
S210 TIMER
S215 PHONO
S221 TIME TUNE/CH/UP
S205 AUX
S211 DIS MODE
S216 ST/MONO
S222 PRESET MODE
S206 L CURSOR
S212 PROGRAM
S217 REV MEMO
S207 VR DOWN
S218 CANCEL
BN33 TO MAIN
KOREA EUROPE AUSTRALIA USA
14 L L H H
15 L H L H
100PIN
H : 2 BAND
L : 3 BAND
R221 3.9K
VR LED
IC21 u-COM ANAM 1099M
VDD KEY0 KEY1 KEY2 KEY3 KEY4 KEY5 KEY6 KEY7 KEY8 KEY9 VR UP VR DN AREA AREA ST IN SD IN AIN4 AIN5 AIN6 AIN7 VSS VASS VAREF VDD BACK UP TEST XTIN XTOUT VSS
XIN XOUT RESET REMOTE REMI REMO A B C -20dB MUTE A MUTE POW MUTE CE DI CLK DO DATA CLK POW ON/OFF VKK
Z201 47Kx8
Z202 47Kx8
FIP1 (FIP 16AMW7R)
F2 F2 F2 P32 P31 P30 P29 P28 P27 P26 P25 P24 P23 P22 P21 P20 P19 P18 P17 P16 P15 P14 P13 P12 P11 P10 P9 P8 P7 P6 P5 P4 P3 P2 P1 G16 G15 G14 G13 G12 G11 G10 G9 G8 G7 G6 G5 G4 G3 G2 G1 F1 F1 F1
R253 2.2(1/4W)
2.5KHz
400Hz
160Hz
10K
D222 D221
R243 47K
C226 3.3/50V
R239 47K
C225 3.3/50V
R213 47K
R212 47K
D208 D209
R207 10K
R208 10K
C221 0.0022(M)
C220 0.0022(M)
R242 130K
R238 150K
C219 0.012(M)
C218 0.012(M)
R240 8.2K
R241 27K
D220~D223 1N4148 (AC→DC CONV)
D220
C216 0.022(M)
C217 0.022(M)
R235 47K
C224 3.3/50V
R234 330K
R233 10K
R232 18K
R236 8.2K
R237 33K
IC24 LM324 B.P.F FOR SPEANA
Q208 R2206
R225 390
D219 TUNED LED
X202 32.768K
C207 22P
C208 10P
Q209 A1175Y
D204
C204 10/16V
X201 8M
C210 22P
C209 22P
R222 100K
D205 1N4148
C201 10/16V
R209 56K
IC22 SBX1610M2 REMOTE SENSER
OUT
D203
R214 4.7K
Q205 R2206
R216 22K
Q204 R1206
Q215 R2206
Q206 R1206
L202 10uH
C212 0.1(B)
C211 0.1(B)
R244 5.6K
D223
C223 820P
C222 820P
R246 150K
R245 33K
R247 47K
C227 2.2/50V
IC23 MC4558S AMP & B.P.F FOR SPEANA
R228 1K
C213 4.7/50V
R229 4.7K
R231 1.8K
C215 10/16V
C214 22P
R230 22K
R248 560
R249 560
C230 22/16V
C231 0.01
R251 5.6K
R250 5.6K
C229 0.01
C228 22/16V
IC25 RESET IC
IN
C205 1000/6.3V
C239 1000/16V
R211 1K
C206 1/50
L201 100uH
D202
C203 0.1(B)
C202 0.1(B)
R217 1K
R227 1K
D206 1N4148
D207
D201
D201~D216 1N4148
R224 270
D217 POWER INDICATOR
R219 10K
R220 10K
SIGNAL G CK DATA
BN184 TO MAIN
F2 F1 -33V -12V G +12V ST 5.6V POWER
BN21 TO MAIN
C B A
BN24 TO MAIN
POWER MUTE -20dB AMUTE REMOTE
BN12 TO TUNER
G 5V BACK UP RET SD ST DO CLK DI CE
BN25 TO ECHO MIC B'D
Q206~Q208,Q215 LED DRIVE u-COM & KEY MATRIX CIRCUIT

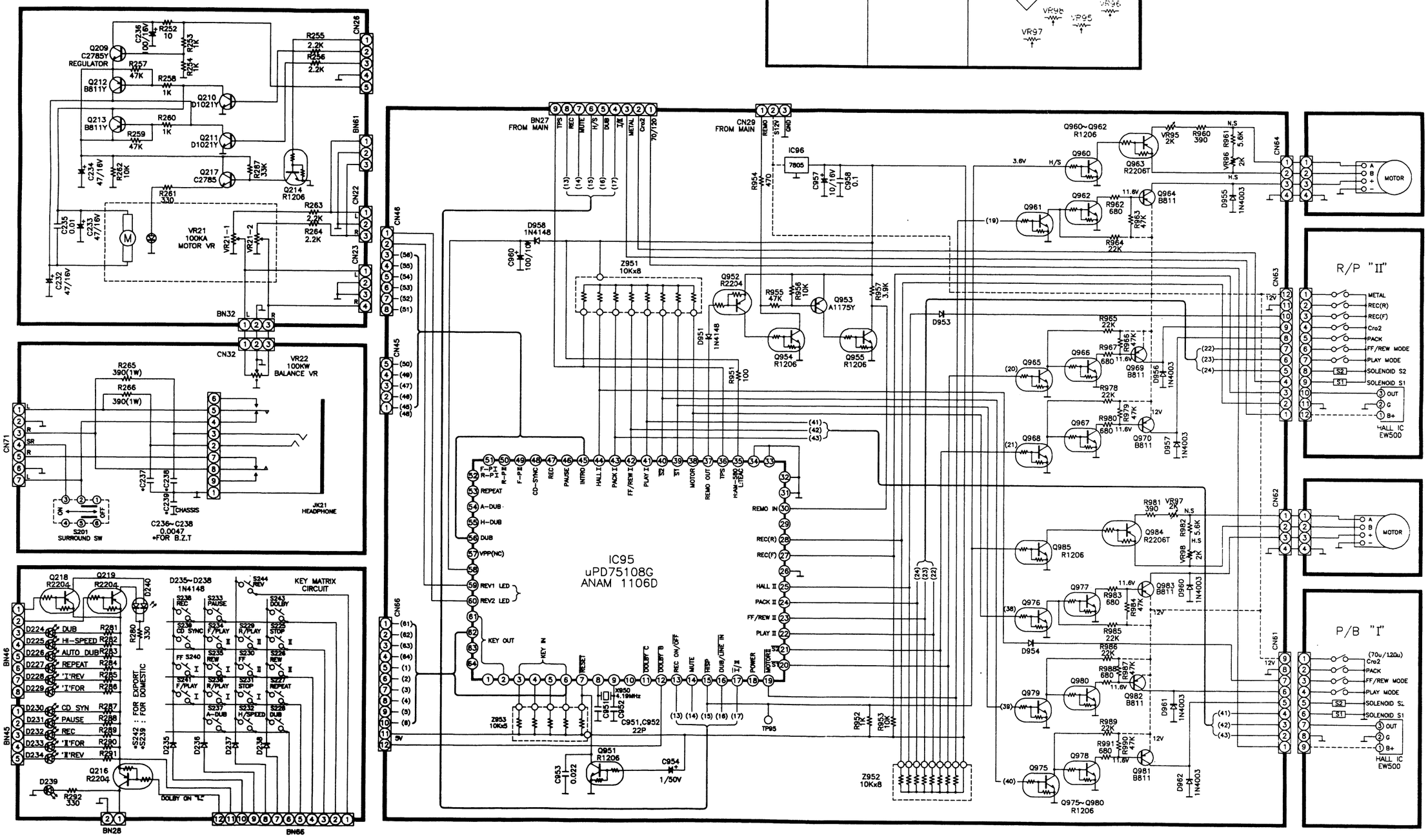
■ SCHEMATIC DIAGRAM



QUEL-07113 / Druck 3

(CONTROL)

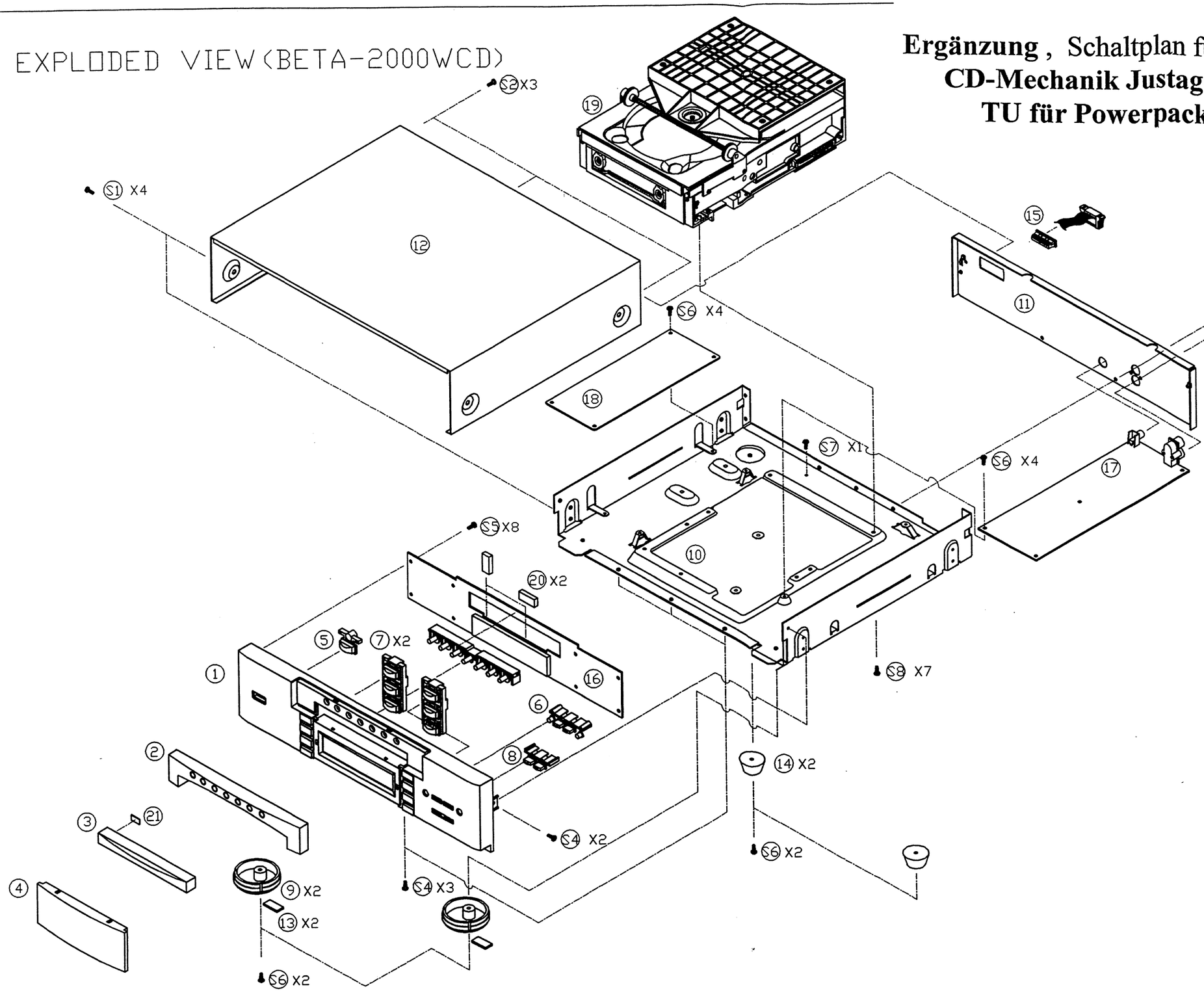

CONTROL PCB
IC95
VR94
VR95
VR96
VR97


IC95
uPD75108G
ANAM 1106D
KEY MATRIX CIRCUIT
VR21 100KA MOTOR VR
VR22 100KW BALANCE VR
S201 SURROUND SW
JK21 HEADPHONE
R/P "II"
P/B "I"
MOTOR
HALL IC EW500
IC96
7805
Z951 10Kx8
Z952 10Kx8
Z953 10Kx5
X950 4.19MHz
C951,C952 22P
Q951 R1206
Q952 R2204
Q953 A1175Y
Q954 R1206
Q955 R1206
Q960~Q962 R1206
Q963 R2206T
Q964 B811
Q965 Q966 Q967 Q968 Q969 B811 Q970 B811
Q975~Q980 R1206
Q981 B811 Q982 B811 Q983 B811
Q984 R2206T
Q985 R1206
Q976 Q977 Q978 Q979 Q980
D951 1N4148
D953 D954 D955 D956 D957 D960 D961 D962 1N4003
D958 1N4148
D235~D238 1N4148
FROM EXPORT : FOR DOMESTIC
DOLBY ON "L"
CHASSIS
*FOR B.Z.T

185.330-8

VTCF-150A
Beta 2000 W

Ergänzung , Schaltplan für 7 fach CD-Wechsler
CD-Mechanik Justage siehe QBNr. 036.656
TU für Powerpack siehe QBNr. 037.021



Best.Nr.: 1853308/01
Ger.Bez.: UNIVERSUM-TURM

GKz: G GERAET
WGT: 659 KOMPLETTE STEREO-TUERME
KD-Sektor: R RUNDFUNK
BaumNr.: 00 KEIN DIAGNOSEBAUM VORHANDEN
Klassierung: STK STEREOKOMBINATION
IFW-FehlerGru.: 205 RDF.,VERST.,TB.,PHONO,CD,CB
Type/Privileg/Universum.Nr VTCF-150A
Beschreibung M.7CD-WECHSLER
VK-Preis: 1399.00

Serviceart: 01 QUELLE-TKD
Garantie fuer Kunden 06 Monate
Sondervereinbarungen: 0 SIEHE SERVICEART

Garantiereparatur 9999999 QUELLE
Sondervereinbarungen: 0 SIEHE SERVICEART

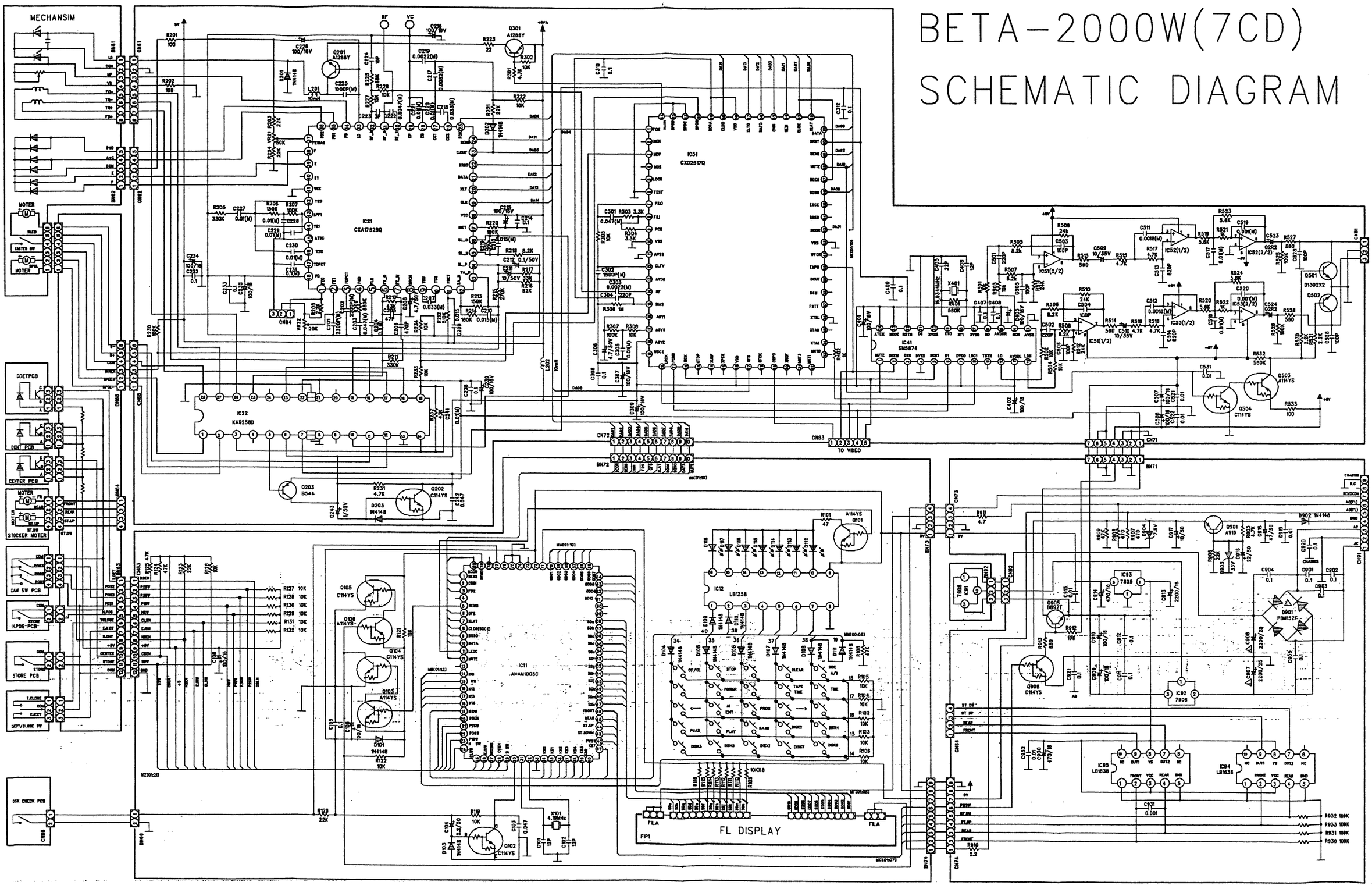
Katalog Seite
Erst 983 SONDERKATALOGE F/S 98 0000
Letzt 000 0000

Geraete Info:
POWERPACK OHNE CD IST BAUGLEICH MIT QBNR.037.021
CD-JUSTAGE SIEHE QBNR. 036.656

Technische Daten:

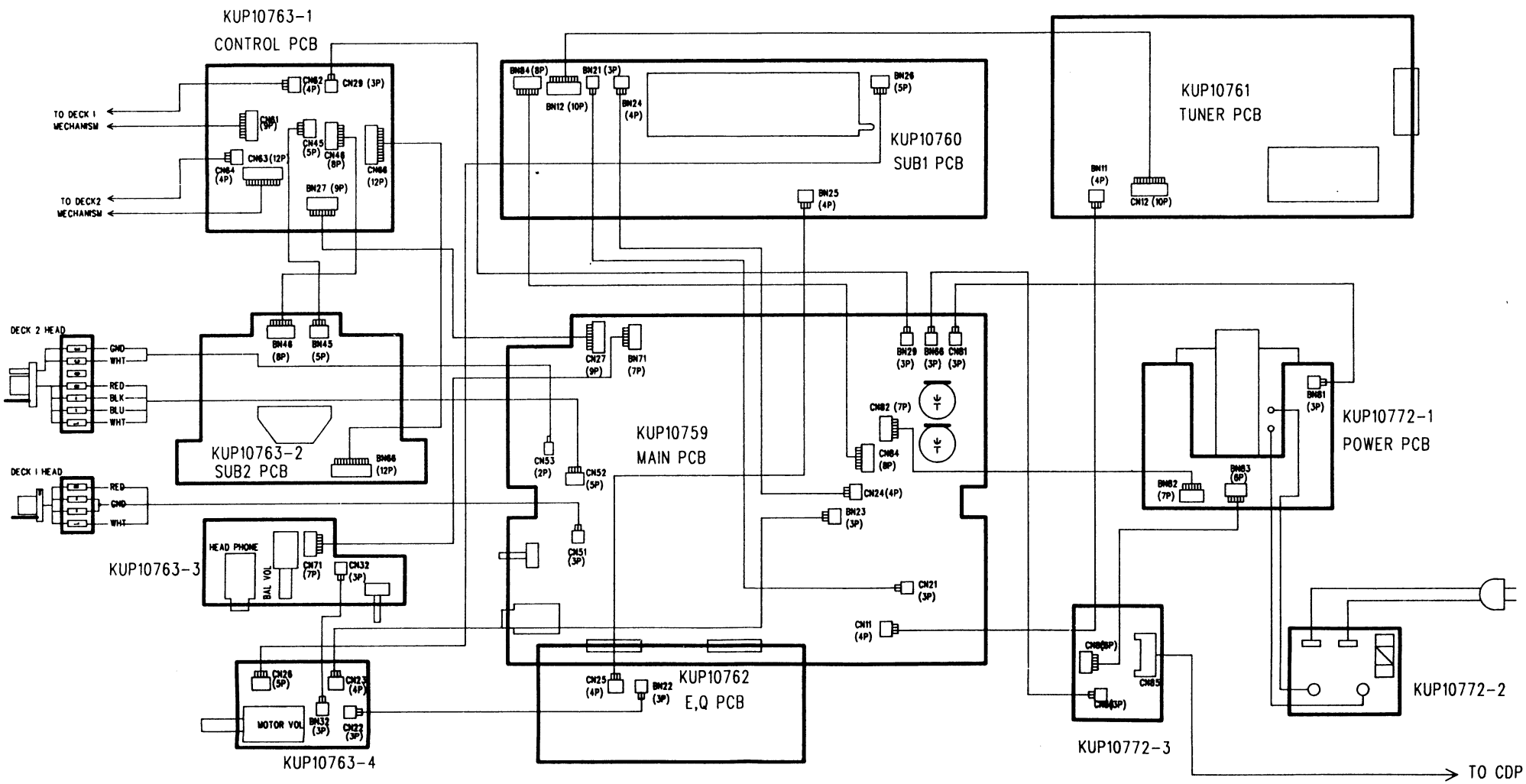
Fehler:
1 7-CD-WECHSLER OHNE FUNKTION
FEHLER: CD-WECHSLER OHNE FUNKTION
URSACHE: MASSEVERBINDUNG UEBER TONLEITUNG (CINCH)
ABHILFE: VERBINDUNG (CINCH) HERSTELLEN
2 PICKUP NACH AUSTAUSCH OHNE FUNKTION
KURZSCHLUSSBRUECKEN BEI WECHSELMECHANIKEN ETNR.
0410753 UND 0334599 MUESSEN AM 8POL-ANSCHLUSS
(CN801) PIN 1 - PIN 2 DER CONNECTOR-PLATINE SIO-10
ENTFERNT WERDEN.
ACHTUNG,BEI MANCHEN NEUGERAETEN WURDE FESTGESTELLT
DAS AUCH HIER DIE BRUECKEN NOCH GELOETET SIND !!!

BETA-2000W(7CD)
SCHEMATIC DIAGRAM



QUEL-07113 / Druck 6

■ WIRING DIAGRAM

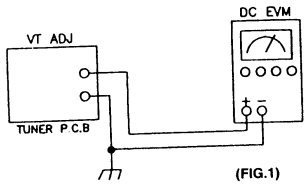


MEASUREMENTS AND ADJUSTMENTS

MW/FM

TUNING FREQUENCY RANGE ADJUSTMENT

1. Test equipment connection is shown in figure 1.
2. Set the unit to the desired band(FM, MW)
3. Place the radio frequency to 108MHz for FM, 600KHz for MW.
4. Adjust L7 for FM, L103 for MW so that the DC voltage is 8.0V for FM, 1.2V for MW.



(FIG.1)

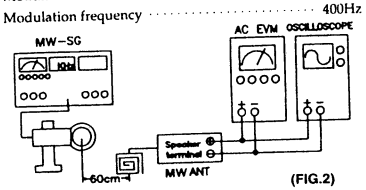
MW RF ADJUSTMENT

1. Test equipment connection is shown in figure 2.
2. Set the unit to "MW" position.
3. Place the radio frequency display and signal generator setting to 612KHz for MW.
4. Adjust L104 for maximum output.
5. Place the radio frequency display and signal generator setting to 1500KHz for MW.
6. Adjust CT02 for maximum output.
7. Repeat steps 3 - 6.
8. Adjust LF01 for maximum output.

Note: Antenna input level must be as low as possible being free from AGC.

MW SIGNAL GENERATOR CONDITION

Modulation 30%
Modulation frequency 400Hz



(FIG.2)

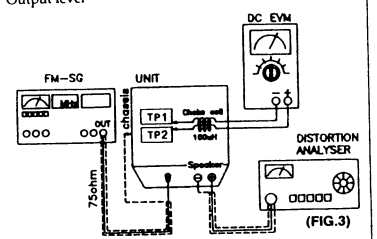
FM MONO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure 3.
2. Set the unit to "FM" position.
3. Place the radio frequency display and signal generator setting to 100.10MHz.
4. Adjust T102 core so that voltage measured in signal mode is 0mV(0±30mV) in range.
5. Adjust T101 so that the distortion factor of L-ch is minimized.
6. Repeat steps 4 and 5 a few times.
7. Make sure that the distortion factors of L-ch and R-ch nearly the same with each other to minimum.

Note: The adjusting screwdriver used should be made of ceramic.

FM SIGNAL GENERATOR CONDITION

Modulation 100%
Modulation frequency 400Hz
Output level 66dB

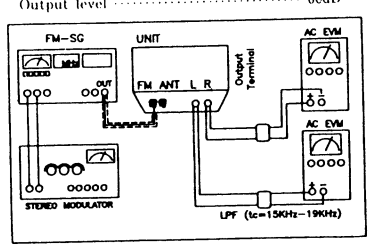


(FIG.3)

FM STEREO SPERATION ADJUSTMENT

1. Test equipment connection is shown in figure 4.
2. Set the unit to "FM" position.
3. Place the radio frequency display and signal gere ator setting to 100.1 MHz.
4. STEREO MODULATION setting MODE "STEREO"
5. Adjust VR 03 for Lch and Rch speration maxium.

FM SIGNAL GENERATOR CONDITION
Modulation ..... "L" CH or "R" CH 45%, Pilot 10%.
Modulation frequency ..... 1KHz, Pilot(19KHz)
Output level 66dB



(FIG.4)

*CASSETTE

MEASUREMENT CONDITION:

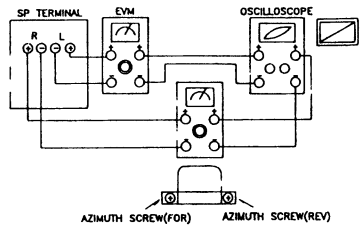
- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.

TEST TAPE:

- Head azimuth adjustment(10KHz, -10dB) : TCC-153
- Tape speed adjustment(3KHz, -10dB) : TCC-112
- Normal reference blank . TCC-103A
- Dolby level adjustment (330Hz, 0dB) : MTT-150

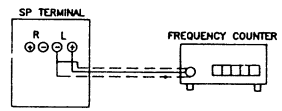
HEAD AZIMUTH ADJUSTMENT(TAPE Ⅰ, Ⅱ)

1. Test equipment connection is shown in figure.
2. Playback the azimuth adjusted part(10KHz, -10dB) of the test tape(TCC-153) and regulate the angle adjusting screw so that the outputs of L-ch and R-ch are maximized.
   (When the adjusting positions are different with L-ch and R-ch, find and position where are the outputs of L-ch and R-ch are balanced, and then mark the adjustment.)
3. At the same time, draw a lissajous waveform and eliminate phase deflection.
4. After the adjustment, apply screw-lock to the angle adjusting value.



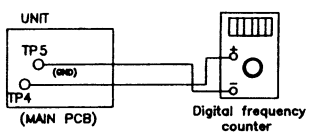
TEST SPEED ADJUSTMENT(TAPE Ⅰ, Ⅱ)

1. Test equipment connection is shown in figure .
2. Place unit into "TAPE" position.
3. Playback the test tape TCC-112.
4. Adjust first VR98(VR96) (TAPE Ⅰ, Ⅱ) for high speed (6000±120Hz) and then VR97(VR95) (TAPE Ⅰ, Ⅱ) for Normal speed (3000±60Hz)



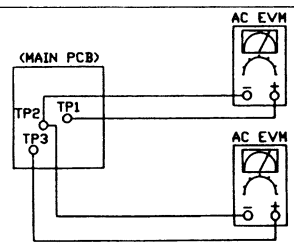
BIAS OSCILLATION ADJUSTMENT (TAPE Ⅱ)

1. Test equipment connection is shown in figure.
2. Set the unit to "TAPE" position.
3. Insert a CrO_2 tape and then press the record and pause button.
4. Adjust L510 for 105KHz on frequency counter reading.



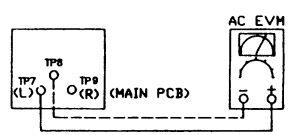
RECORDING BIAS ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "TAPE" Position.
3. Insert a Metal tape and set the cassette deck to "REC" mode.
4. Adjust SVR 8(L-ch) and SVR7(R-ch) for recording bias so that voltage in signal is 1400μA
5. At the same time, check CrO_2 tape(800μA) and Normal tape (600μA)

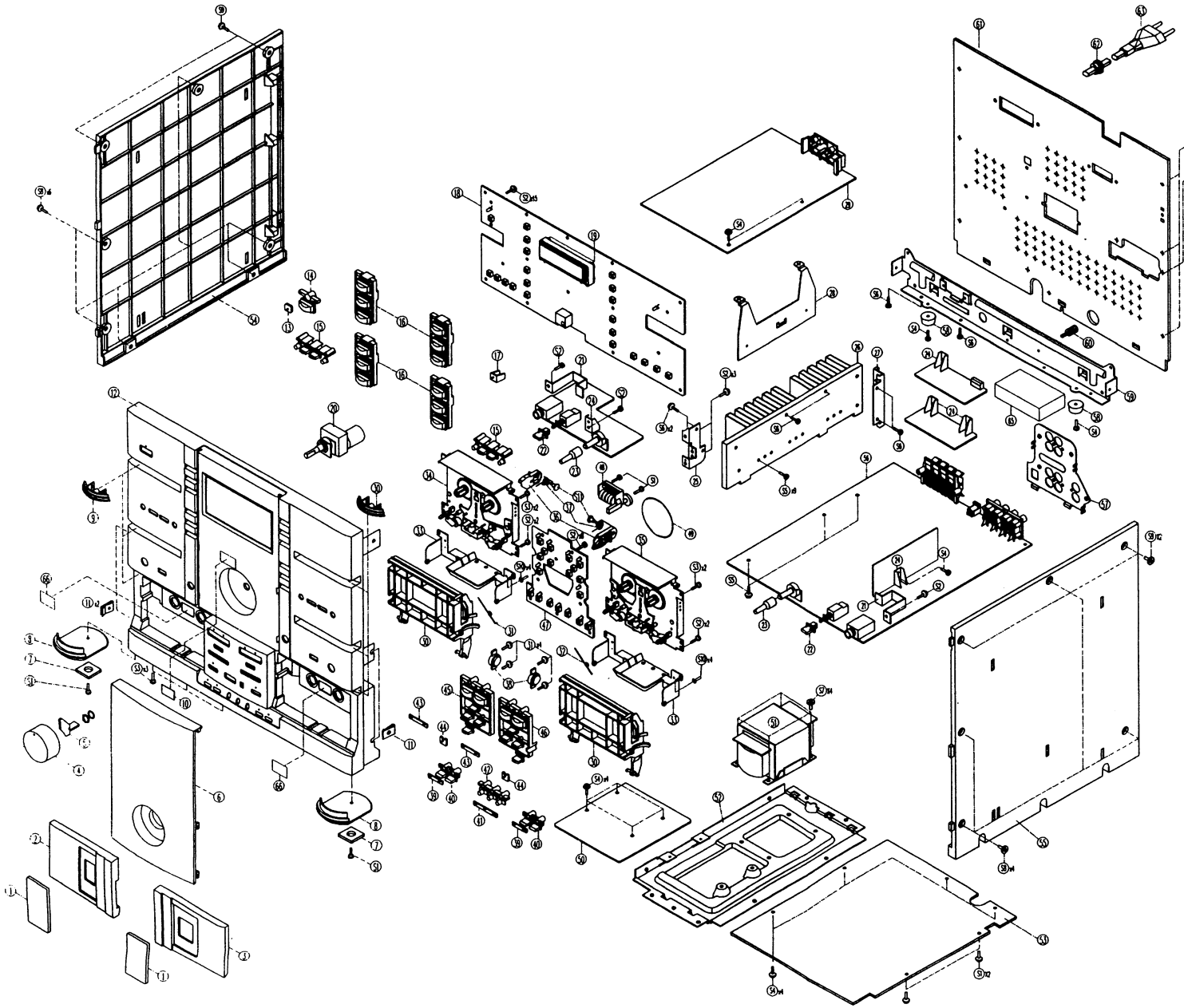


PLAYBACK GAIN ADJUSTMENT

1. Playback the playback gain adjust part (400Hz, 200nWb) of the test tape (MTT-150)
2. DECK Ⅰ ┌ L-CH Adj point : SVR2
   └ R-CH Adj point : SVR1
   DECK Ⅱ ┌ L-CH Adj point : SVR4
   └ R CH Adj point : SVR3
   So that AC mV meter will become 580mV.



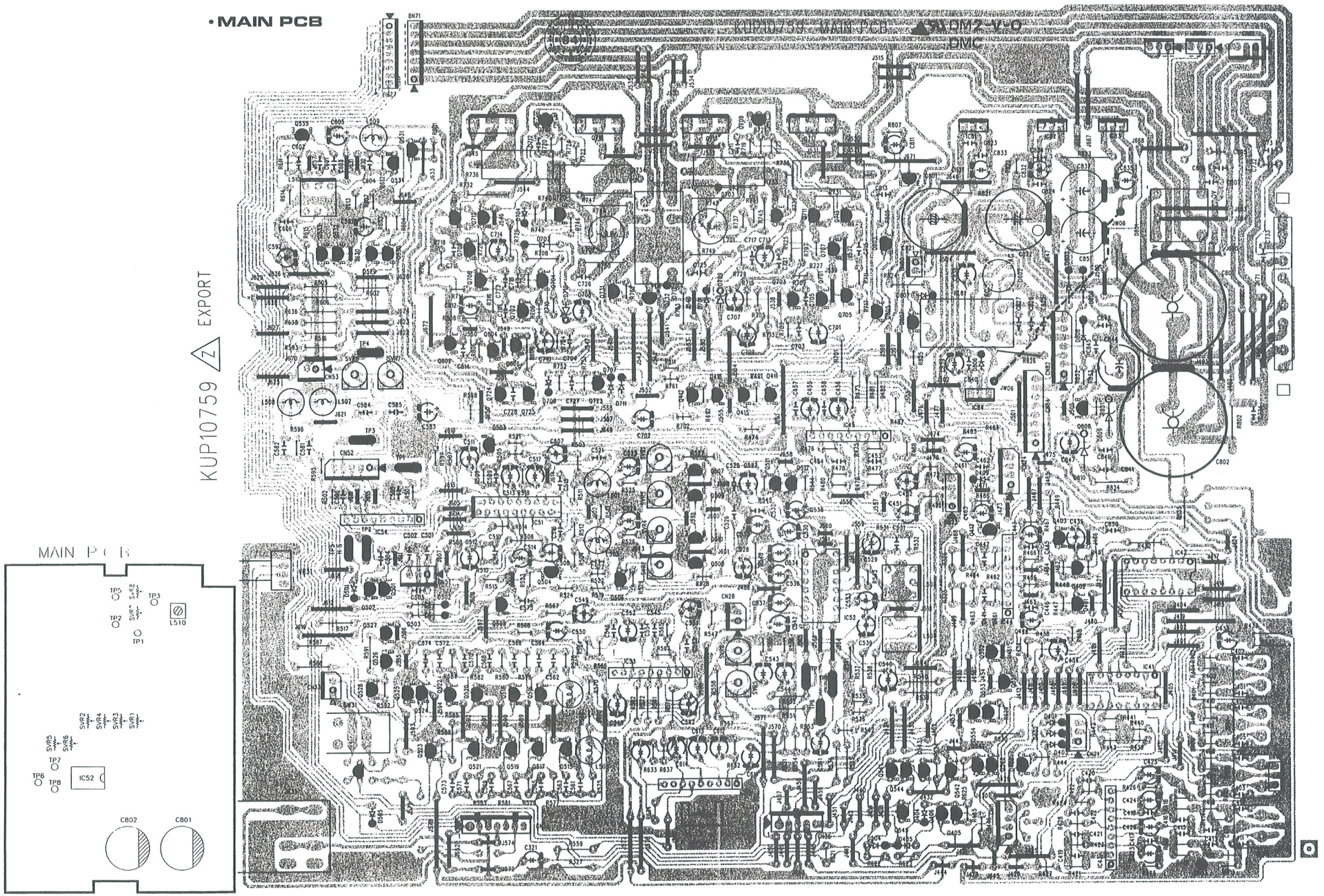
■ EXPLODED VIEW



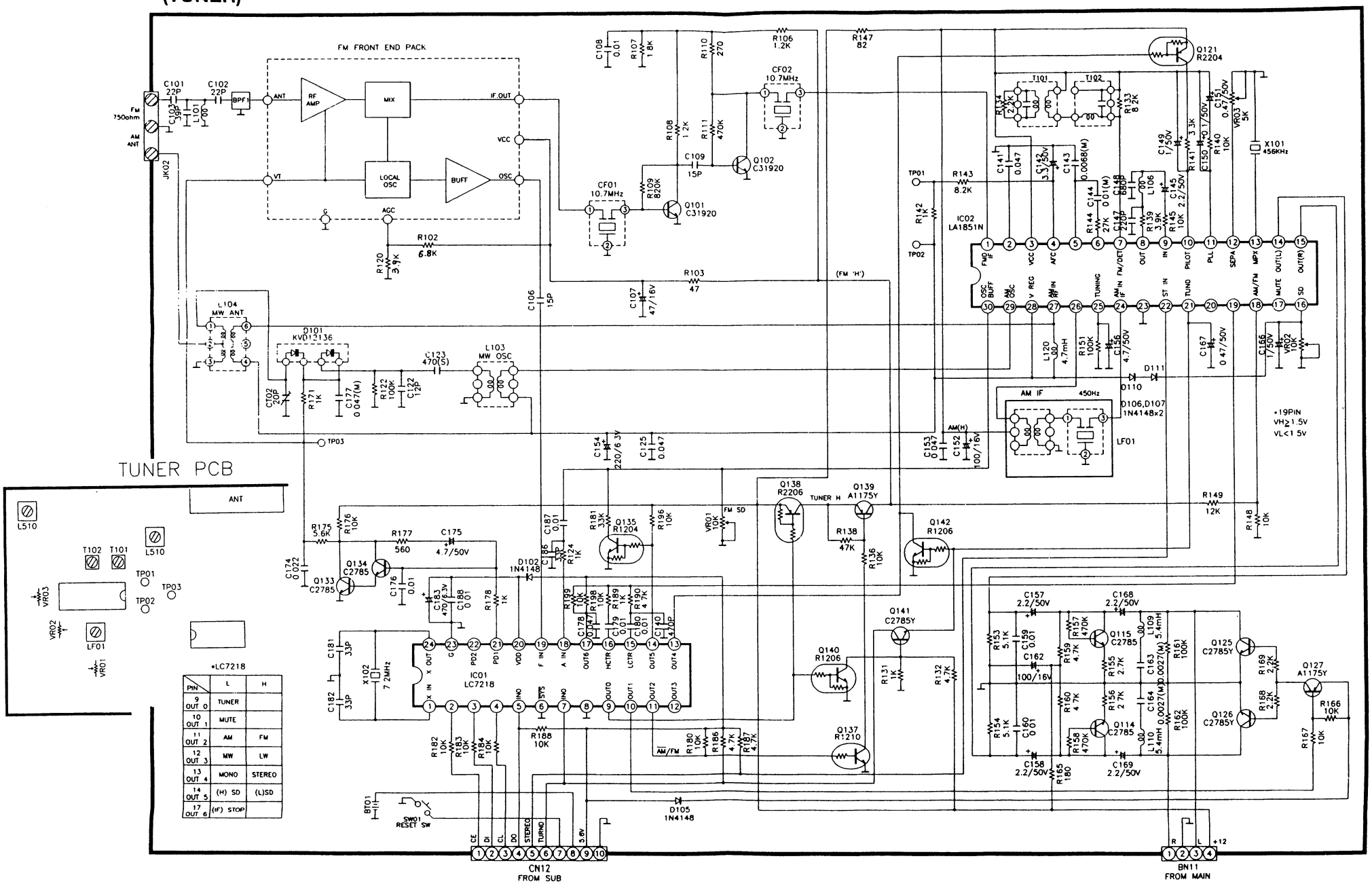
NO	DESCRIPTION	PARTS-NO	Q'TY	MATERIAL	REMARK
1	CST WINDOW	KGU1A125	2	ACRYL	
2	DOOR BASE L	KGR1A072	1	ABS	
3	DOOR BASE R	KGR1A073	1	ABS	
4	VOLUME KNOB	KBN1A041	1	ABS	
5	VOLUME INDICATOR	KGL1A095	1	ACRYL	
6	FL WINDOW	KGU1A126	1	ACRYL	
7	FOOT CUSHION	KHG1AD50Y	2	FELT	
8	FRONT FOOT	KGL1A034	2	ABS	
9	FOOT	KGL2AD20Y	8	ABS	
10	REMOCON FILTER	KGU1A026	1	PVC	
11	U-MUT	KNE4060	4	SMSCI=0.6	
12	FRONT PANEL	KGR1A138	1	HI-PS	
13	PLAY INDICATOR	KGL1A039	1	ACRYL	
14	POWER KNOB	KB11A289	1	ABS	
15	TACT KNOB(WOOD)	KB11A290	2	ABS	
16	TACT KNOB	KB11A291	4	ABS	
17	INDICATOR	KGL1A091	1	ACRYL	
18	SUB-1 PCB ASSY	KUP1074S7	1	XPC-1	
19	FLT BRACKET	KMD1A127	2	SPTH T=0.5	
20	VOLUME	KB11A208	1	ABS	
21	PCB BRACKET	KMK1A070	2	SCC T=1.0	
22	PUSH KNOB	KBC1A045	2	ABS	
23	BALANCE KNOB	KBN1A042	2	ABS	
24	PCB BRACKET	KMD1A091	5	SPTH T=0.5	
25	H-SINK BRACKET L	KMD1A263	1	SCC T=1.2	
26	HEAT SINK	KMD1A078	1	AL6063	
27	H-SINK BRACKET R	KMD1A264	1	SCC T=1.2	
28	PCB BRACKET	KMD1A266	1	SCC T=1.2	
29	TUNER PCB ASSY	KUP1074K7	1	XPC-1	
30	CST HOLDER	KXG1A025-LR	2	UPOS(CP-2200)	
31	CST OPEN SPRING L	KUS1A059	1	SUS304WPB	
32	CST OPEN SPRING R	KUS1A060	1	SUS304WPB	
33	MECHANISM BRACKET	KMD1A259	2	SCC T=1.6	
34	P/B DECK MECHANISM	KJD1CS092	1		
35	R/P DECK MECHANISM	KJD1CS102	1		
36	GUIDE LOCK	KBL1A001	2	POM	
37	LOCK SPRING	KUS1A048	2	SUS304WPB	
38	KNOB(DOOR)	DAMPER ASSY	2		
39	INDICATOR(REC)	KGL1A093	1	ACRYL	
40	TACT KNOB (B)	KB11A207	2	ABS	
41	INDICATOR(DUB)	KGL1A087	1	ACRYL	
42	TACT KNOB(DUB)	KB11A287	1	ABS	
43	PLAY INDICATOR	KGL1A094	2	ACRYL	
44	REC INDICATOR	KGL1A097	2	ACRYL	
45	TACT KNOB L	KB11A293	1	ABS	
46	TACT KNOB R	KB11A094	1	ABS	
47	SUB-2 PCB	KUP1074S2	1		
48	TAPE COUNTER	BJM1000L	1		
49	COUNTER BELT	KHG1A089	1	RUBBER	
50	SUB-2 PCB	KUP1074S0	1	XPC-1	
51	POWER TRANS	KLT1041E	1		
52	BOTTOM CHASSIS	KUA2A038	1	SCC T=1.2	
53	BOTTOM BOARD	KXU1A031	1	HARD BOARD	
54	SIDE COVER L	KR01A023	1	HI-PS	
55	SIDE COVER R	KR01A024	1	HI-PS	
56	MAIN PCB ASSY	KUP1074A2	1	XPC-TR-1	
57	JACK BRACKET	KMD1A089	1	SCC T1	
58	RUBBER FOOT	KXA1DL52	2	RUBBER	
59	REAR CHASSIS	KXF1A077	1	SCC T1	
60	GROUND TERMINAL	KXA1A001	1		
61	REAR BOARD	KXU1A058	1	HARD BOARD	
62	BUSHING AC CORD	KHR179	1	NYLON66	
63	CORD,POWER	KAA2B80Y	1		
64					
65	INSULATOR,POWER	KMX1A077	1		
66	REFLECTOR	KXE1048	1	AL-FOIL	
67					
68					
69					
S11	SCREW,SPECIAL	XHD1A007	2	SK-SCZN	
S10	SCREW	XTN2+6E	8	SK-SCZN	
S9	SCREW	XTB4+10GZ	4	SK-SCZN	
S8	SCREW	XTB4+8JZ	10	SK-SCZN	
S7	SCREW	XTB4+8F	4	SK-SCZN	
S6	SCREW	XTB3+8J	8	SK-SCZN	
S5	SCREW	XTN3+10J	12	SK-SCZN	
S4	SCREW	XTN3+8J	25	SK-SCZN	
S3	SCREW	XTB3+8G	4	SK-SCZN	
S2	SCREW	XTB3+10G	33	SK-SCZN	
S1	SCREW	XTN3+10G	24	SK-SCZN	

■ PRINTED CIRCUIT BOARDS

• MAIN PCB

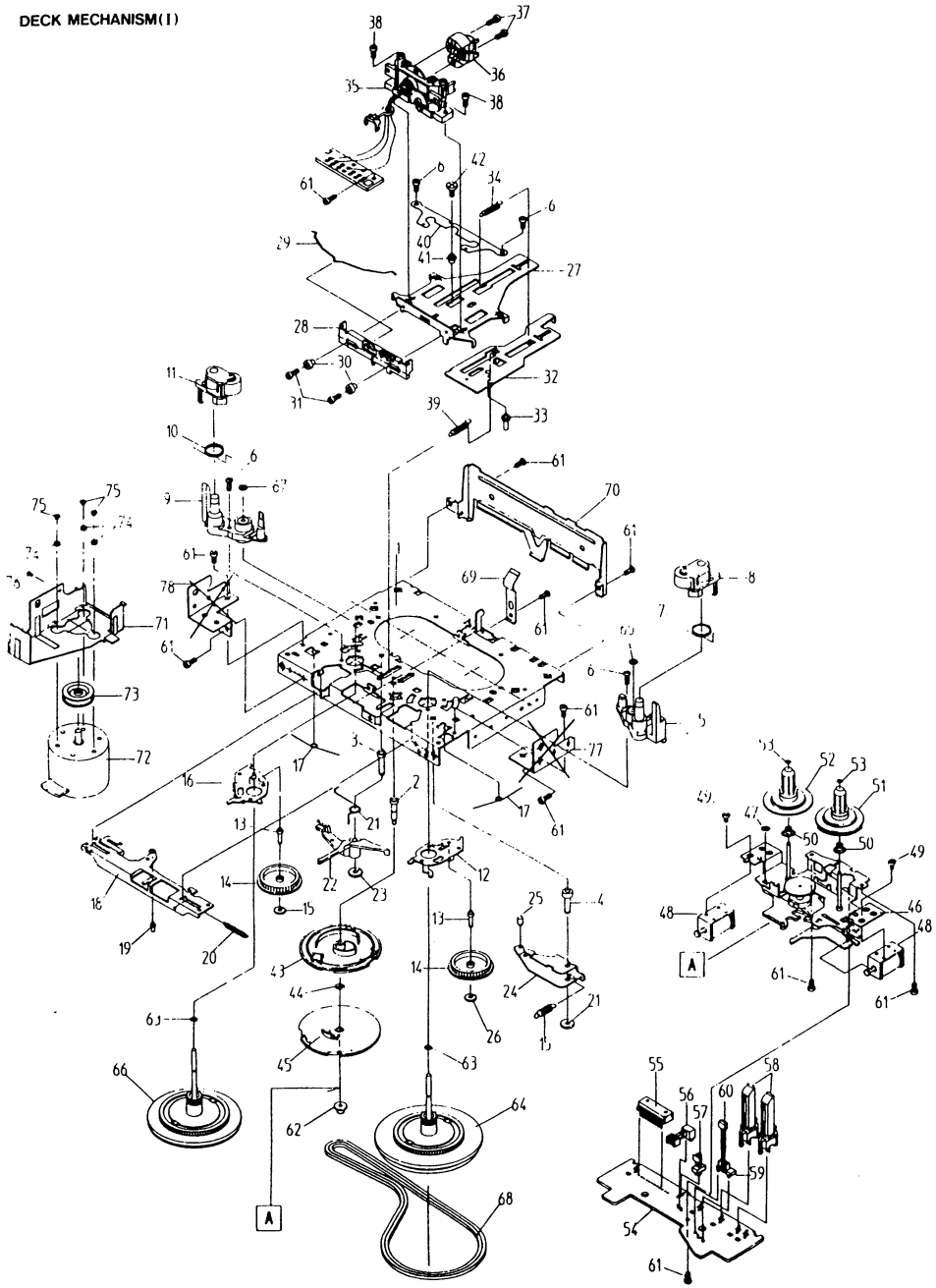


(TUNER)

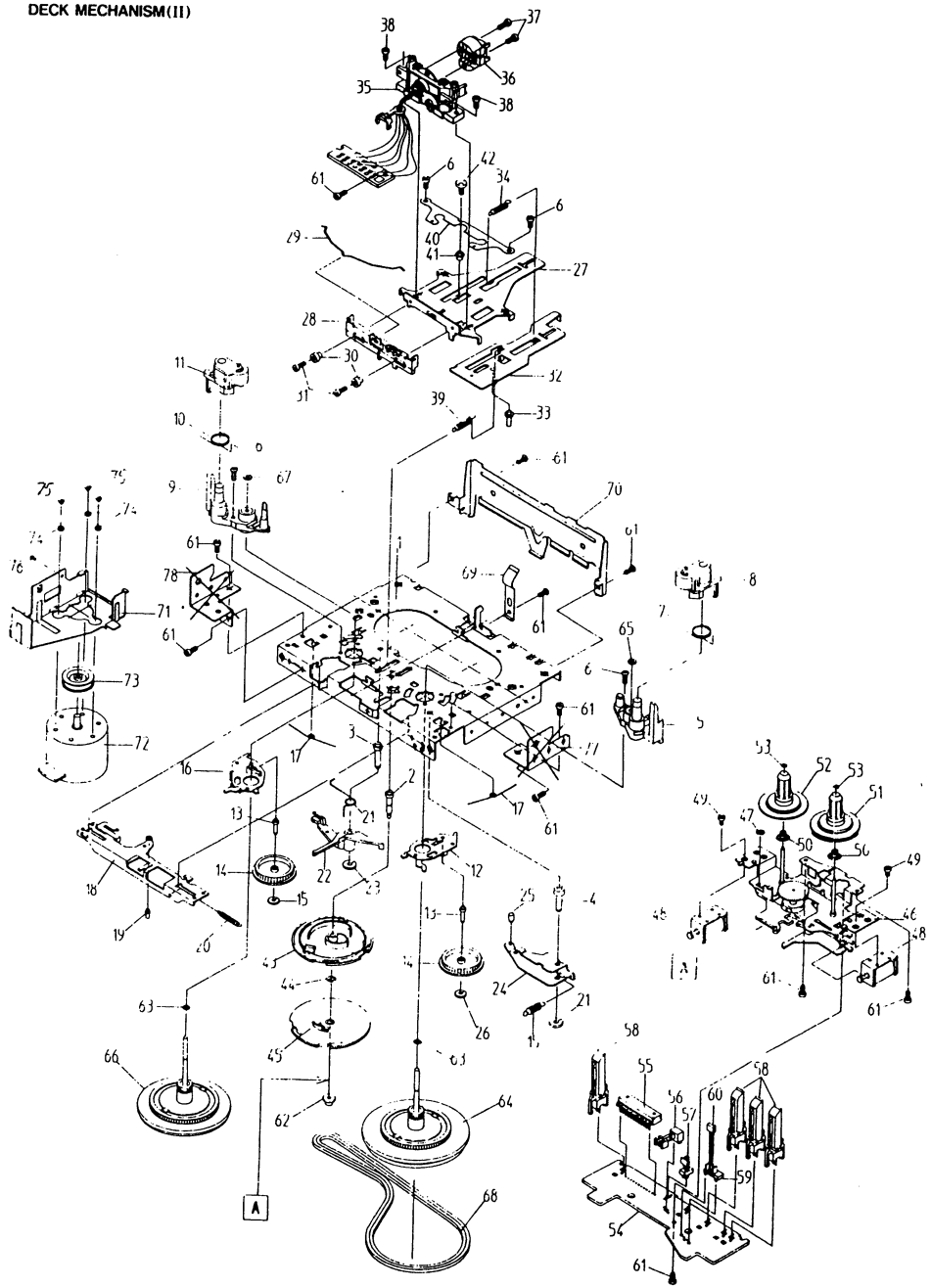


PIN	L	H
9 OUT 0	TUNER	
10 OUT 1	MUTE	
11 OUT 2	AM	FM
12 OUT 3	MW	LW
13 OUT 4	MONO	STEREO
14 OUT 5	(H) SD	(L)SD
17 OUT 6	(IF) STOP	

DECK MECHANISM(I)



DECK MECHANISM(II)

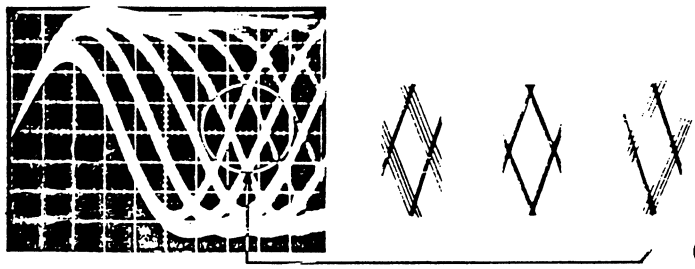


MEASUREMENTS AND ADJUSTMENTS

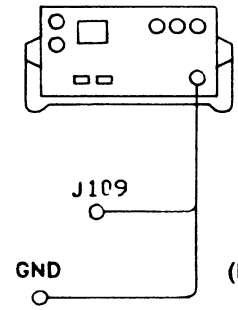
- Oscilloscope ····· 1
- Signal Genenator ····· 1
- TEST DISC 5A(PHILIPS) ····· 1
- Plastic drive(1.4mm) ····· 1
- VTVM ····· 1

1. FOCUS OFF SET ADJUSTMENT

1. Test equipment connection is shown is Fig 1.1.
2. Play the test disc.
3. Adjust VR91 so that the eye pattern of RF Signal is open widest. (Fig 1.2)



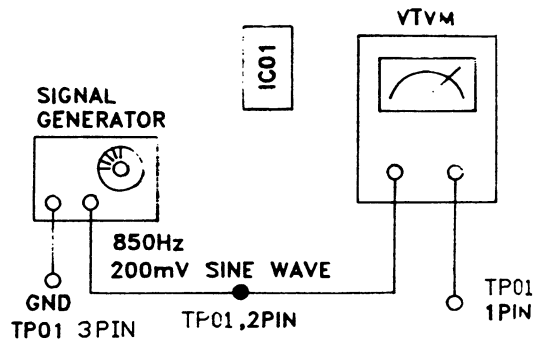
(Fig 1.2)

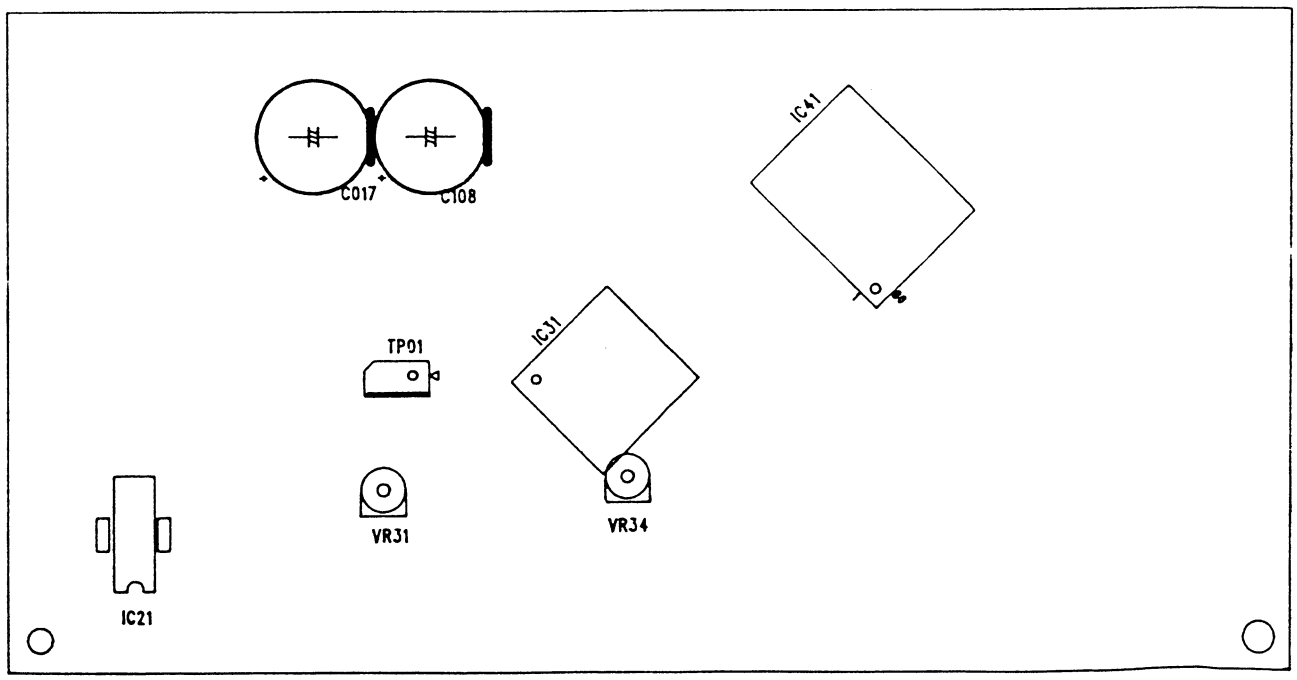


(Fig 1.1)

2. FOCUS GAIN ADJUSTMENT

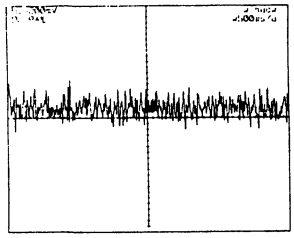
1. Test equipment connection is shown is Fig 2.
2. Play the test disc.
3. Adjust VR93 until monitor level at VTVM becomes 400mV (AC).





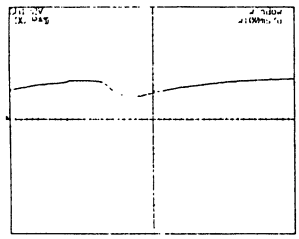
■ WAVE FORMS

❶ FE-O
(TEST POINT : IC31-PIN6)
Focus Drive Output



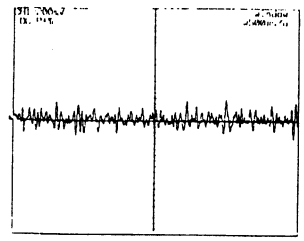
P-P	368mV	AVG	112mV	FALL	85nS
MAX	320mV	UNDSHT	43%	FREQ	7.142KHz
MIN	-48mV	OVRSHT	57%	PERIOD	140mS
RMS	132mV	RISE	10mS	+WIDTH	50mS
				-WIDTH	90mS

❷ SRCH
(TEST POINT : IC31-PIN8)
PIN for Providing a time constant to generate the focus search waveform.



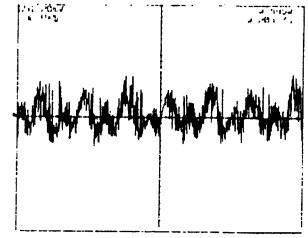
P-P	1.44V	AVG	2.32V	FALL	52mS
MAX	2.96V	UNDSHT	15%	-WIDTH	232mS
MIN	1.52V	OVRSHT	23%		
RMS	2.40V	RISE	244mS		

❸ TA-O
(TEST POINT : IC31-PIN13)
Tracking drive output



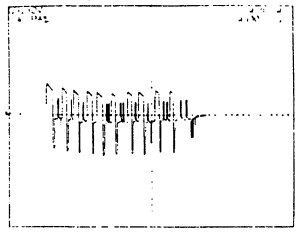
P-P	280mV	AVG	8mV	FALL	15mS
MAX	152mV	UNDSHT	67%	FREQ	4.000KHz
MIN	128mV	OVRSHT	67%	PERIOD	250mS
RMS	44mV	RISE	75mS	+WIDTH	70mS
				-WIDTH	180mS

❹ SL-P
(TEST POINT : IC31-PIN14)
Inverse input pin for the sled Amplifier.



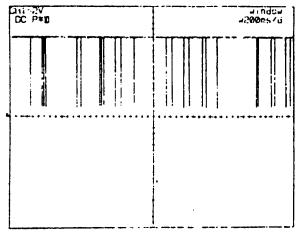
P-P	53.6mV	AVG	1.6mV	FALL	1.2mS
MAX	31.2mV	UNDSHT	22%	FREQ	48.07MHz
MIN	22.4mV	OVRSHT	27%	PRLIOD	21.0mS
RMS	10.4mV	RISE	4.2mS	+WINTH	14.0mS
				-WINTH	7.0mS

❺ SL-O
(TEST POINT : IC31-PIN16)
Sled drive output



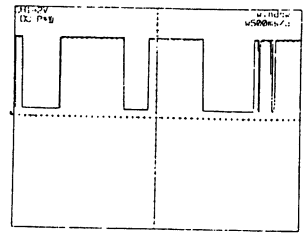
P-P	5.28V	AVG	80mV	FALL	5mS
MAX	2.32V	UNDSHT	73%	FREQ	7.692Hz
MIN	-2.96V	OVRSHT	127%	PREIOD	130mS
RMS	960mV	RISE	55mS	+WINTH	100mS
				WINTH	30mS

❻ CLK
(TEST POINT : IC31-PIN19)
Serial date Transfer Clock input from CPU



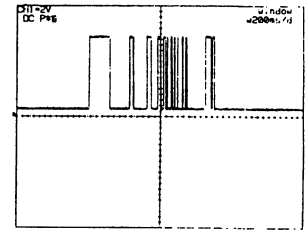
P-P	5.28V	AVG	5.60V	FALL	2mS
MAX	5.84V	UNDSHT	2%	FREQ	25.00Hz
MIN	560mV	OVRSHT	2%	PERIOD	40mS
RMS	5.72V	RISE	2mS	+WIDTH	38mS
				-WIDTH	2mS

❼ XLT
(TEST POINT : IC31-PIN20)
Latch input from CPU



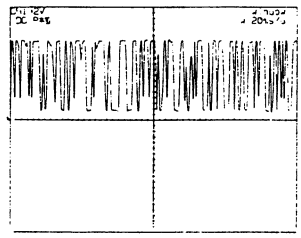
P-P	5.28V	AVG	3.76V	FALL	5mS
MAX	5.84V	UNDSHT	0%	FREQ	1.030Hz
MIN	560mV	OVRSHT	0%	PERIOD	970mS
RMS	4.56V	RISE	5mS	+WIDTH	80mS
				WIDTH	890mS

❽ DATA
(TEST POINT : IC31-PIN21)
Serial date input from CPU.



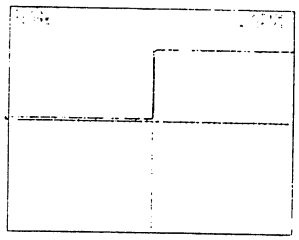
P-P	5.36V	AVG	1.04V	FALL	5mS
MAX	5.84V	UNDSHT	2%	FREQ	31.25Hz
MIN	480mV	OVRSHT	2%	PERIOD	34mS
RMS	1.92V	RISE	2mS	+WIDTH	16mS
				-WIDTH	18mS

❾ C.COUT
(TEST POINT : IC31-PIN23)
Track number count signal output.



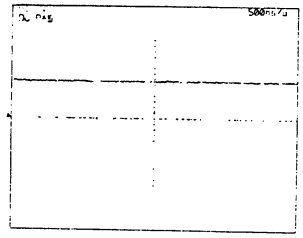
P-P	5.20V	AVG	3.36V	FALL	1.0mS
MAX	5.76V	UNDSHT	3%	FREQ	138.8Hz
MIN	560mV	OVRSHT	2%	PERIOD	7.2mS
RMS	1.96V	RISE	1.8mS	+WIDTH	6.0mS
				-WIDTH	1.2mS

❿ FOK
(TEST POINT : IC31-PIN25)
Focus OK comparator output



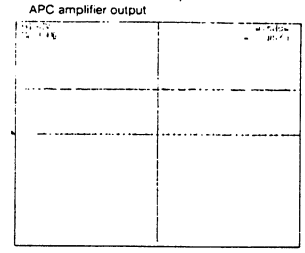
P-P	5.12V	RMS	3.64V	OVRSHT	0%
MAX	5.20V	AVG	2.64V	RISE	10mS
MIN	80mV	UNDSHT	3%		

⓫ CP
(TEST POINT : IC31-PIN29)
Mirror comparator non-Inversed input



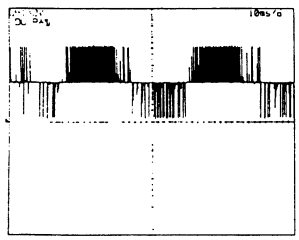
P-P	160mV	AVG	2.64V	FALL	5mS
MAX	2.72V	UNDSHT	0%	FREQ	8.333MHz
MIN	2.56V	OVRSHT	100%	PERIOD	120mS
RMS	2.68V	RISE	5mS	+WIDTH	10mS
				WIDTH	10mS

⓬ LD
(TEST POINT IC41-PIN33)
APC amplifier output



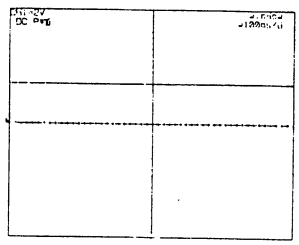
P-P	160mV	AVG	3.20V	FALL	0mS
MAX	3.36V	UNDSHT	0%	FREQ	25.00MHz
MIN	3.20V	OVRSHT	100%	PERIOD	40mS
RMS	3.24V	RISE	20mS	+WIDTH	20mS
				-WIDTH	20mS

⓭ MDP
(TEST POINT : IC41-PIN3)
Output for spindle motor servo control.



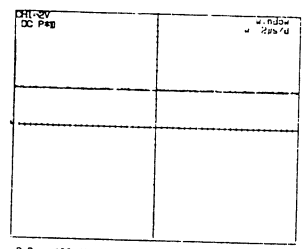
P-P	5.28V	AVG	2.88V	FALL	0mS
MAX	5.44V	UNDSHT	6%	FREQ	1.666KHz
MIN	160mV	OVRSHT	106%	PERIOD	600mS
RMS	3.12V	RISE	100mS	+WIDTH	500mS
				WIDTH	100mS

⓮ CLTV
(TEST POINT : IC41-PIN12)
VCO control voltage input for master PLL



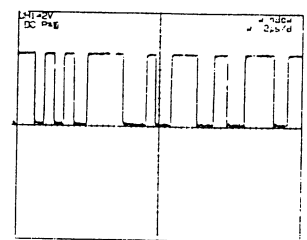
P-P	80mV	AVG	2.72V	FALL	0mS
MAX	2.80V	UNDSHT	0%	FREQ	500.0Hz
MIN	2.72V	OVRSHT	0%	PERIOD	3mS
RMS	2.76V	RISE	1mS	+WIDTH	1mS
				-WIDTH	2mS

⓯ ASYI
(TEST POINT : IC41-PIN16)
Asymmetry Comparator circuit voltage input.



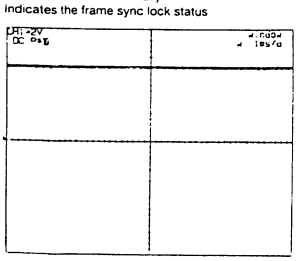
P-P	160mV	AVG	2.56V	FALL	0mS
MAX	2.72V	UNDSHT	0%	FREQ	25.00MHz
MIN	2.56V	OVRSHT	100%	PERIOD	40mS
RMS	2.60V	RISE	20mS	+WIDTH	20mS
				WIDTH	20mS

⓰ ASYO
(TEST POINT : IC41-PIN17)
EFM full-swing output



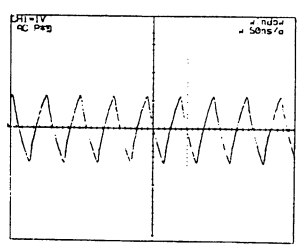
P-P	5.20V	AVG	2.96V	FALL	20mS
MAX	5.20V	UNDSHT	2%	FREQ	735.2KHz
MIN	0mV	OVRSHT	2%	PERIOD	1.36mS
RMS	3.88V	RISE	40mS	+WIDTH	680mS
				-WIDTH	680mS

⓱ GFS
(TEST POINT : IC41-PIN27)
Indicates the frame sync lock status



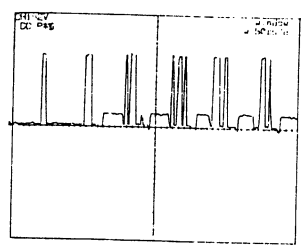
P-P	400mV	AVG	5.20V	FALL	50mS
MAX	5.44V	UNDSHT	33%	FREQ	1.020KHz
MIN	5.04V	OVRSHT	33%	PERIOD	980mS
RMS	5.28V	RISE	10mS	+WIDTH	10mS
				-WIDTH	970mS

⓲ XTAL
(TEST POINT : IC41-PIN34)
Input to crystal Oscillator circuit, 16.9344MHz.



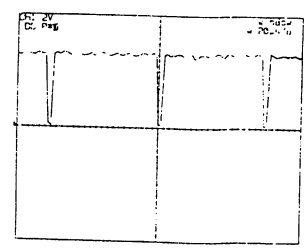
P-P	2.40V	AVG	-40mV
MAX	1.16V	UNDSHT	4%
MIN	-1.24V	OVRSHT	2%
RMS	700mV	RISE	22.0mS

⓳ DATA
(TEST POINT : IC41-PIN51)
Input serial data from CPU



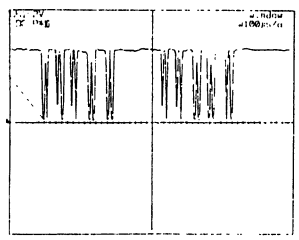
P-P	5.44V	AVG	1.28V	FALL	1.5mS
MAX	5.20V	UNDSHT	8%	FREQ	90.90KHz
MIN	-240mV	OVRSHT	2%	PERIOD	11.0mS
RMS	2.16V	RISE	1.5mS	+WIDTH	5.0mS
				WIDTH	6.0mS

⓴ XLAT
(TEST POINT : IC41-PIN52)
Latch input from CPU



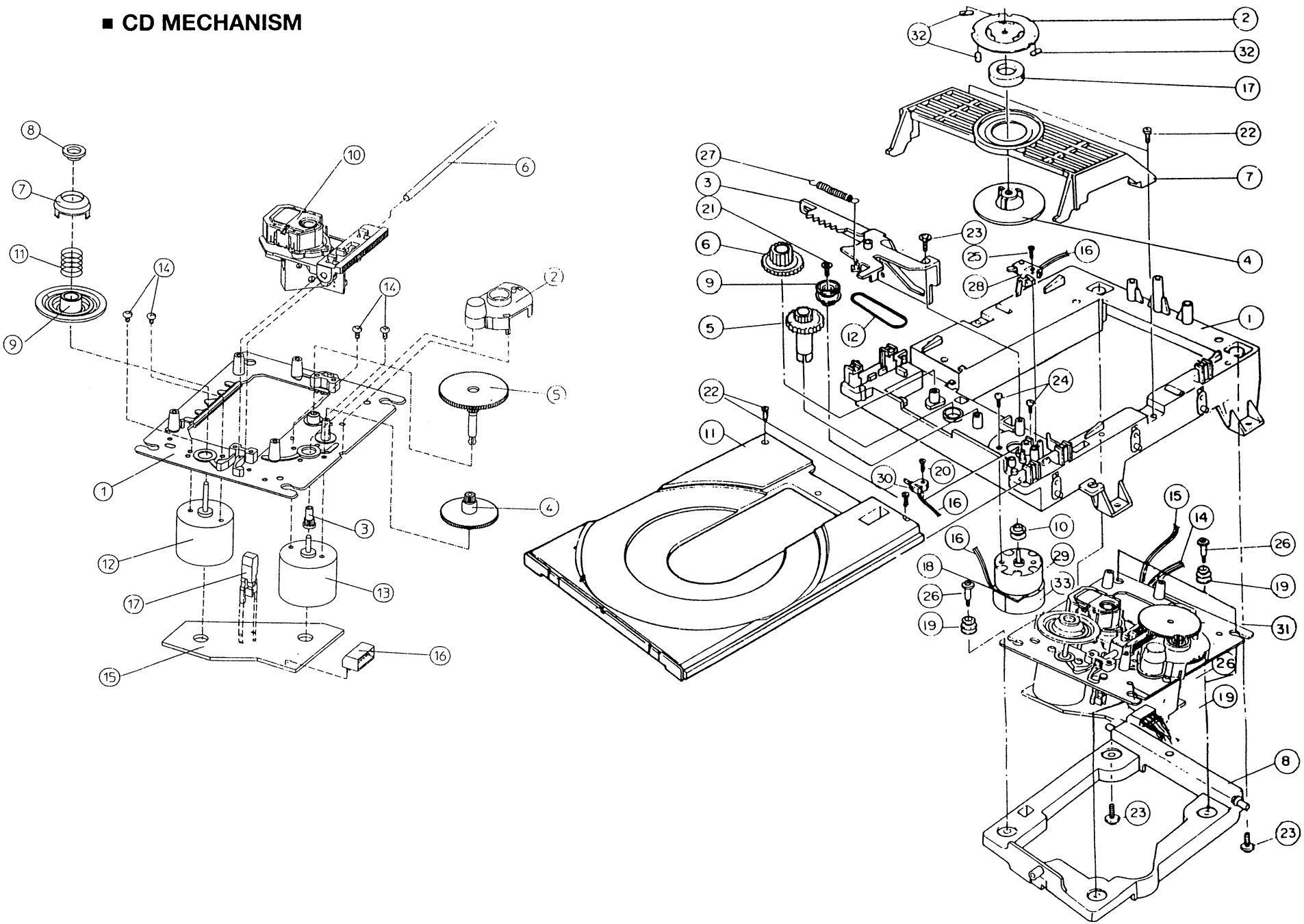
P-P	5.20V	AVG	4.80V	FALL	1.8mS
MAX	5.36V	UNDSHT	2%	FREQ	13.51KHz
MIN	160mV	OVRSHT	3%	PERIOD	74.0mS
RMS	5.00V	RISE	1.8mS	+WIDTH	70.0mS
				-WIDTH	4.0mS

㉑ CLOCK
(TEST POINT : IC41- PIN53)
Input serial data transfer clock from CPU.

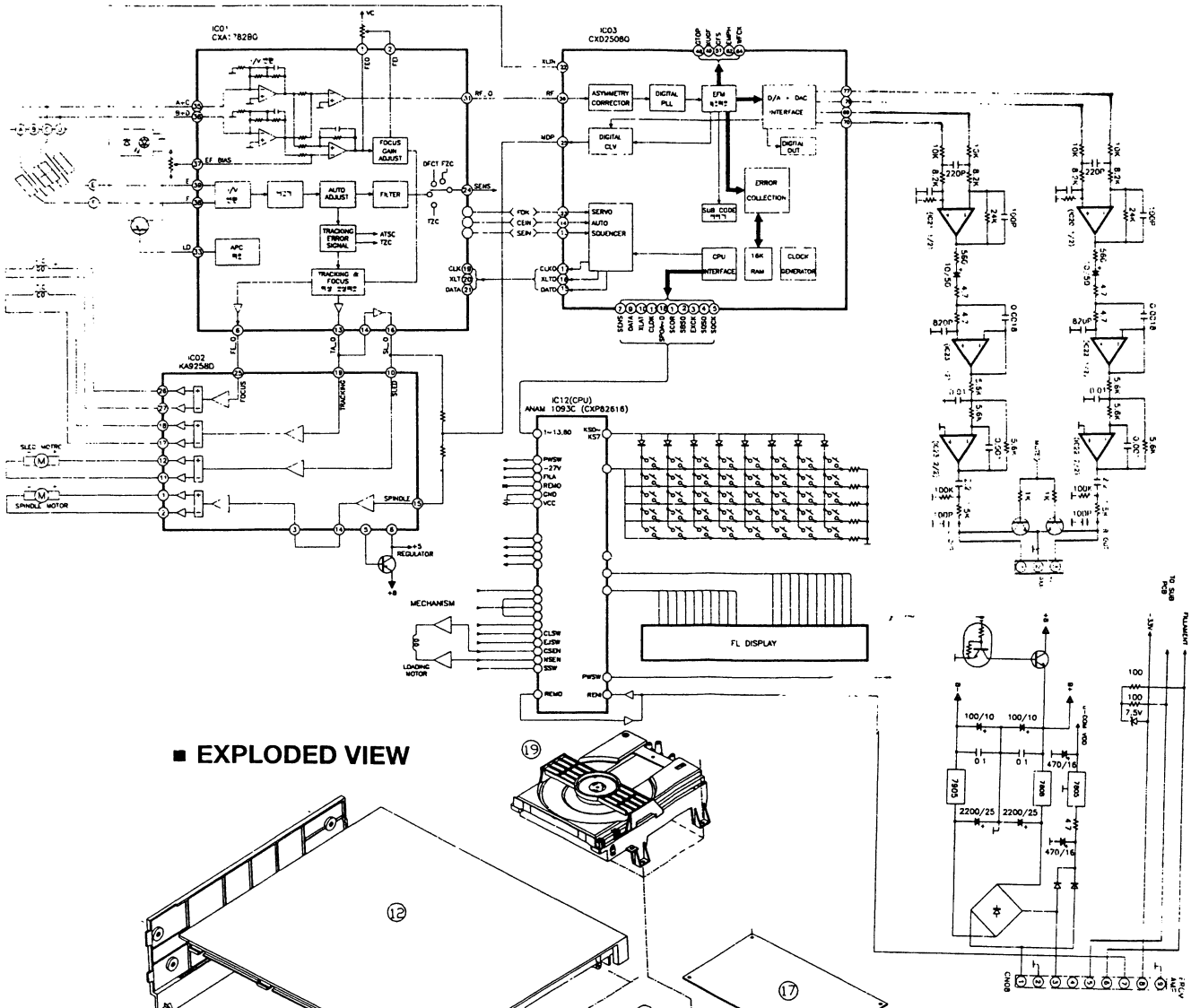


P-P	5.12V	AVG	4.40V	FALL	5mS
MAX	5.28V	UNDSHT	2%	FREQ	20.00KHz
MIN	160mV	OVRSHT	2%	PERIOD	50mS
RMS	4.72V	RISE	5mS	+WIDTH	30mS
				-WIDTH	20mS

■ CD MECHANISM



■ BLOCK DIAGRAM



■ EXPLODED VIEW